

CLAIM AMENDMENTS

1. (Currently Amended) Degradation-resistant polyamide producible by anionic polymerisation of at least one lactam in the presence of at least one basic catalyst and if necessary at least one activator, with addition of a desactivator after completed polymerisation in the melt state, ~~characterised in that~~ wherein the desactivator comprises a proton donor and an amine.

2. (Currently Amended) Polyamide according to claim 1, ~~characterised in that~~ wherein the amine is a non-volatile secondary or tertiary amine.

3. (Currently Amended) Polyamide according to claim 2, ~~characterised in that~~ wherein the amine is an N-dimethylated fatty amine with 12 – 18 C atoms.

4. (Currently Amended) Polyamide according to claim 3, ~~characterised in that~~ wherein the amine function is sterically hindered.

5. (Currently Amended) Polyamide according to claim 4, ~~characterised in that~~ wherein the amine is a HALS amine.

6. (Currently Amended) Polyamide according to ~~at least one of the claims 1 to 5~~ claim 1, ~~characterised in that~~ wherein the proton donor is an organic carboxylic acid or polycarboxylic acid.

7. (Currently Amended) Polyamide according to claim 6, ~~characterised in that~~ wherein the organic carboxylic acid is present in the form of an oligomeric wax-like product, preferably as polyethylene wax, which contains carboxyl groups, or as a cooligomer or copolymer.

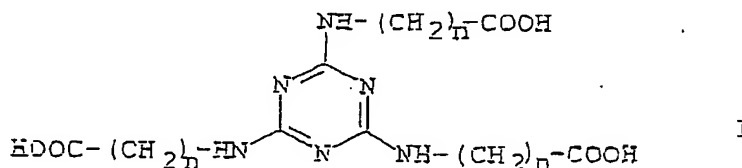
8. (Currently Amended) Polyamide according to claim 6, ~~characterised in that~~ wherein the proton donor is an ethylene(meth)acrylic acid oligomer or polymer.

9. (Currently Amended) Polyamide according to claim 8, ~~characterised in that~~ wherein the polymer is an ethylene(meth)acrylic acid copolymer.

10. (Currently Amended) Polyamide according to claim 6, ~~characterised in that~~ wherein the carboxylic acid is a copolymer with monomers containing acid groups, which occur partially as a salt (ionomers) and the cation is preferably Zn^{++} .

11. (Currently Amended) Polyamide according to ~~at least one of the claims 1 to 10~~ claim 1, ~~characterised in that~~ wherein the desactivator comprises a compound, which has at least one proton-donating group and at least one amino group.

12. (Currently Amended) Polyamide according to claim 11, ~~characterised in that~~ wherein the desactivator is selected from compounds of the general formula I



with $n = 1$ to 10 , preferably 5 .

13. (Currently Amended) Polyamide according to ~~at least one of the claims 11 and 12~~ claim 11, ~~characterised in that~~ wherein a non-volatile secondary or tertiary amine is added in addition to the desactivator.

14. (Currently Amended) Polyamide according to ~~at least one of the claims 1 to 13~~ claim 1, ~~characterised in that~~ wherein the polyamide has a relative viscosity η_{rel} of $1.5 - 4.0$, measured in a 0.5% by weight solution in m-Cresol according to EN.ISO 307.

15. (Currently Amended) Polyamide according to ~~at least one of the claims 1 to 14~~ claim 1, ~~characterised in that wherein~~ the lactam has 6 – 12 C atoms, preferably is lactam 6 and/or lactam 12 or a mixture thereof.

16. (Currently Amended) Polyamide according to ~~at least one of the claims 1 to 15~~ claim 1, ~~characterised in that wherein~~ the catalyst is an alkali lactamate or a lactamate-forming compound.

17. (Currently Amended) Polyamide according to ~~at least one of the claims 1 to 16~~ claim 1, ~~characterised in that wherein~~ the activator is selected from the group of acylated lactams, isocyanates and carbodiimides which can be present also in capped or cyclised form.

18. (Currently Amended) Polyamide according to ~~at least one of the claims 1 to 17~~ claim 1, ~~characterised in that wherein~~ a liquid system, which contains the activator and the catalyst in a liquid polar aprotic solvation medium, is used for the polymerisation control.

19. (Currently Amended) Polyamide according to ~~at least one of the claims 1 to 18~~ claim 1, ~~characterised in that wherein~~ the polyamide is present as a granulate.

20. (Currently Amended) Polyamide according to ~~at least one of the claims 1 to 18~~ claim 1, ~~characterised in that wherein~~ the polyamide occurs as moulded articles in the form of injection moulding parts, fibres, films, plates, pipes, coatings, shaped or profile pieces.

21. (Currently Amended) Method for continuous production of a degradation-resistant polyamide starting from the resulting polylactam comprising at least one lactam with addition of at least one basic catalyst and if necessary of at least one activator by means of a polymerisation at a temperature between 140 and 320°C, ~~characterised in that wherein~~ a proton donor and an amine is added to the resulting polylactam in the melted aggregate state as desactivator.

22. (Currently Amended) Method according to claim 21, ~~characterised in that~~
wherein the desactivator is added in the form of a melted master batch.

23. (Currently Amended) Method according to claim 21 ~~or 22, characterised in that~~
wherein the method is implemented in a continuous mixer, e.g. in an extruder.

24. (Currently Amended) Method according to claim 23, ~~characterised in that~~
wherein the method is implemented in a twin-screw extruder.

25. (Original) Method for processing polyamide or the polymer blend thereof, which was produced by anionic polymerisation of lactam in the presence of at least one basic catalyst and if necessary at least one activator, in which method the polyamide or the polymer blend thereof is melted and, before further processing, a proton donor and an amine is added to the melt in the molten state as desactivator.

26. (Currently Amended) Method according to claim 25, ~~characterised in that~~
wherein the desactivator in the form of a master batch granulate is added before remelting to a PA granulate produced via anionic polymerisation.

27. (Currently Amended) Method according to claim 25 ~~and 26, characterised in that~~
wherein, after granulation of the polyamide, the desactivator is applied to the polyamide granulate by means of adhesion-promotor before processing into the moulded article.

28. (Currently Amended) Method according to ~~at least one of the claims 25 to 27~~
claim 25, characterised in that wherein the polyamide or the polymer blend thereof is comminuted before thermoplastic conversion into the finished part as an intermediate method step and is present thereby as a granulate.

29. (Currently Amended) Method according to ~~at least one of the claims 21 to 28~~
claim 21, characterised in that wherein a non-volatile secondary or tertiary amine compound is used as amine.

30. (Currently Amended) Method according to claim 29, ~~characterised in that~~ wherein the secondary amine compound carries at least one sterically hindered C₁ – C₁₈ alkyl group.

31. (Currently Amended) Method according to ~~at least one of the claims 21 to 30~~ claim 21, ~~characterised in that~~ wherein an organic carboxylic acid is used as proton-donating compound.

32. (Currently Amended) Method according to claim 31, ~~characterised in that~~ wherein the proton donor is an acidic polyethylene wax in which the carboxylic acid is preferably part of the chain.

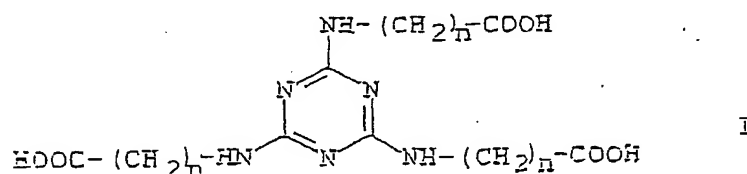
33. (Currently Amended) Polyamide according to claim 31 ~~or 32~~, ~~characterised in that~~ wherein the proton donor is an ethylene(meth)acrylic acid copolymer.

34. (Currently Amended) Polyamide according to ~~at least one of the claims 31 to 33~~ claim 31, ~~characterised in that~~ wherein the proton donor is a copolymer with monomers containing carboxylic acid groups, which monomers are present partially as a salt (ionomers), the cation preferably being Zn⁺⁺.

35. (Currently Amended) Method according to ~~at least one of the claims 21 to 34~~ claim 21, ~~characterised in that~~ wherein the concentration of acidic groups (e.g. –COOH) is at least as great as the basicity originating from the catalyst but smaller than the sum of the basicity and the concentration of amine functions.

36. (Currently Amended) Method according to ~~at least one of the claims 21 to 35~~ claim 21, ~~characterised in that~~ wherein a compound is used as desactivator which has at least one proton-donating group and at least one amine group.

37. (Currently Amended) Method according to claim 36, ~~characterised in that~~
wherein the compound is selected from the general formula I



with $n = 1$ to 10 , preferably $n = 5$.

38. (Currently Amended) Method according to ~~at least one of the claims 21 to 37~~
claim 21, ~~characterised in that~~ wherein the lactam has 6 – 12 C atoms, preferably lactam 6
and/or lactam 12.

39. (Currently Amended) Method according to ~~at least one of the claims 21 to 38~~
claim 21, ~~characterised in that~~ wherein the catalyst is an alkali lactamate or a compound
forming a lactamate.

40. (Currently Amended) Method according to ~~at least one of the claims 21 to 39~~
claim 21, ~~characterised in that~~ wherein the activator is selected from the group of acylated
lactams, isocyanates and carbodiimides, which can also be present in capped or cyclised
form.

41. (Currently Amended) Method according to ~~at least one of the claims 21 to 40~~
claim 21, ~~characterised in that~~ wherein a catalytically acting liquid system is used for the
polymerisation control, in which system the activator and the catalyst are contained in a
liquid polar aprotic solvation medium.

42. (Currently Amended) Method according to ~~at least one of the claims 21 to 41~~
claim 21, ~~characterised in that~~ wherein the desactivator, if necessary with further additives, is
added in the form of a master batch, the master batch carrier being a thermoplastic.

43. (Currently Amended) Method according to claim 42, ~~characterised in that~~ wherein the master batch is produced by incorporation of the desactivator components in the melt of a thermoplastic and the thermoplastic is preferably polyamide and the master batch can contain further additives, in particular stabilisers.

44. (Currently Amended) Use of the method according to ~~at least one of the claims 21 to 43~~ claim 21 for producing granulate for the further thermoplastic processing into polyamide moulded articles, or for direct production of moulded articles.

45. (Currently Amended) Use of the method according to ~~at least one of the claims 25 to 43~~ claim 25 for recycling polyamide or the polymer blends thereof.